REMARKS

This application has been reviewed in light of the Office Action dated October 5, 2007, 2007. Claims 1-3 and 5-18 are presented for examination, of which Claims 1, 5, 10 and 16 are in independent form. Claims 1, 5 and 16 have been amended to define still more clearly what Applicants regard as their invention. Favorable reconsideration is requested.

The specification has been amended to conform the Summary of Invention section to the amended claims.

Claims 1-3, 5-9 and 16-18 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, the Office Action states that "[t]he amendment to independent Claims 1, 5 and 16 'input three-dimensional position information of a plurality of positions inputted by moving a real object in the real space by a user' is not conveyed by the originally filed disclosure because an object is different than the stylus discussed at paragraph [0028] that would be moved by the user." Similarly, the amendment to the specification was objected to under 35 U.S.C. § 132(a) on the same ground. Applicants have carefully reviewed and amended the claims to ensure that they comply with the requirements of Section 112, first paragraph, with particular attention to the points raised in the Office Action. In particular, Applicants have amended the claims to replace the term "real object" with --operating unit--. It is believed that the rejection of the claims under Section 112 have been obviated and its withdrawal is, therefore, respectfully requested.

In addition, corresponding amendments have been made to the specification to obviate the objection under Section 132(a). The withdrawal of this objection is, accordingly, also respectfully requested.

Claims 1-3 and 5-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshifumi Kitamura et al., "Consolidated Manipulation of Virtual and Real Objects", September 1997, Proceedings of the ACM Symposium on Virtual Reality Software Technology, pgs. 133-138 (Kitamura).

As described in paragraph [005] of the specification, the purpose of the present invention is that:

> "The present invention has been made in light of these problems, is an object of the present invention to enable dynamic creating of constraining shapes in a compounded real space, and to enable easy operating of virtual objects using constraining shapes even where constraining shapes have not been registered beforehand."

Claim 10 is directed to an information processing method for changing the position and orientation of a virtual object in mixed reality space obtained by combining a real space and a virtual space. The method includes the steps of: (1) obtaining three-dimensional position information of a plurality of positions designated by an operating unit moved by a user in the real space, the operating unit being capable of measuring the position and orientation; (2) determining an input of a constraining shape or an operation of the virtual object; (3) obtaining a constraining shape by using a shape generated based on the obtained three-dimensional position information in case of the input of the constraining shape; (4) changing the position and orientation of the virtual object according to instructions from the user, based on the obtained constraining shape as constraint condition in case of the operation of the virtual object; (5) and (6) combining an image of the virtual object generated according to the changed position and orientation, and the real image, to obtain a mixed reality image.

Kitamura has been fully described in previous Office Actions and it is not believed necessary to repeat that description herein. Page 7 of the Office Action cites page 135, first paragraph, of Kitamura as disclosing the obtaining step of Claim 10. In particular, the Office Action states that "the same 6 DOF tracker device is used to control the position of a virtual world object(s) and to control the position of a constraining real world object(s) which is similar to applicants system where stylus 1060 is used to control the virtual world object(s) and to control the location of the constraining real world object(s)." The Office Action further states that the "6 DOF measures position and orientation in real space of the stylus on the 6 DOF." Applicants respectfully disagree. The cited passage merely states:

> "The concept of a consolidated manipulation environment with virtual and real objects is shown in Figure 2. The user employs a six degrees of freedom (DOF) tracker device to manipulate virtual objects. The shapes of the real objects are assumed to be known in advance, and the motion of the real objects is also obtained by the 6 DOF tracker."

Applicants respectfully submit, however, that manipulating a virtual object and controlling the motion of a real object is not the same as obtaining three-dimensional position information of a plurality of positions, as recited in Claim 10. In Claim 10, the three-dimensional position information of the plurality of positions is used to obtain a constraining shape. This is clearly not disclosed in the cited portion of Kitamura (or anywhere else in that reference), as established by Kitamura's statement that "[t]he shapes of the real objects are assumed to be known in advance...." If the shapes of the real objects are known in advance, there would be no need to obtain three-dimensional position information in order to obtain a constraining shape. Further, nothing in Kitamura suggests that the 6 DOF tracker is capable of measuring position and orientation.

The Office Action also states on page 3 that it is discussed in Applicants' specification that "alternative means for stylus 1060 for inputting the 3D coordinates of the constraining shape is possible, thus, the claimed ...obtaining step... may be means other than stylus 1060 which alternative means is taught by 6 DOF tracker. Applicants respectfully submit that this is irrelevant. As discussed above, Kitamura does not teach the obtaining step of Claim 10 because if fails to teach or suggest obtaining three-dimensional position information of a plurality of positions that are used to obtain a constraining shape, or an operating unit capable of measuring position and orientation.

The Office Action cites sections 4.1 and 5.4 of Kitamura as disclosing the determining step of Claim 10. In particular, the Office Action states that "[t]he system determines if a shape having constraints is being input for the real object such as a toy block (section 4.1) or surface (section 5.4) or such as moving the real object which has a constraining shape and the system determines if the user is moving the virtual object." Applicants respectfully disagree. Section 4.1 discusses, among other things, building with toy blocks as an example task in a consolidated manipulation environment and Section 5.4 discusses, among other things, the relationship between the manipulation phases and the haptic representation of each phase. Applicants have found nothing in those passages that would teach or suggest "determining an input of a constraining shape or an operation of the virtual object," as recited in Claim 10.

The Office Action acknowledges that "Kitamura does not fully teach: obtaining a constraining shape by using a shape generated based on the obtained three-dimensional position information in the case of the input of the constraining shape" as recited in Claim 10. However,

the Office Action states that:

> "Kitamura's use of the 6 DOF tracker device to control the position of the real world object suggests using the same 6 DOF tracker device to input the constraining shape of the real world object since this would require less input devices for the user to use and learn how to use. Additionally section 2 at lines 7-14 states 'To bring an object that already exist in the real world into a computer-generated virtual world, it is necessary to construct accurate shape representation of the real object in a computer system. A traditional method for this is to use conventional modeling software after precisely measuring the size or length of the real object by hand.' which suggests using a computer input device to measure the real object in order to have accurate shape representation of the real object's constraining shape."

Applicants strongly disagree. Kitamura's discussion of a method of precisely measuring the size or length of the real object **by hand** is completely contradictory to a suggestion of using a computer input device to measure the real object.

The Office Action also states that "it would have been obvious to one of ordinary skill in the art at the time of applicants invention to input with the 6 DOF tracker device the 3D coordinates of the constraining shape because the toy block (section 4.1) or surface (section 5.4) need to have their respective constraining coordinates input in order to the virtual object to preoperly interact with the real objects...." Applicants respectfully disagree. Kitamura makes clear that the shapes of the real objects are assumed to be known in advance. Thus, there is no suggestion whatsoever of using the 6 DOF tracker to input the 3D coordinates of the constraining shapes.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as a reference against Claim 10.

Independent Claims 1, 5 and 16 recite features similar to those discussed above with respect to Claim 10 and, therefore, are also believed to be patentable over Kitamura for the reasons discussed above.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present continued application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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